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VARIATION IN THE RAY FLOWERS OF THE COMMON CONE FLOWER (*RUDBECKIA HIRTA*).

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THE following observations concerning the variation in the ray flower of the common cone-flower or brown-eyed Susan were made during the summer of 1902.

Lot No. 1.—318 heads. From prairies near what is known as the Stickney tract (Chicago, Ill.). Soil clayey, ground rather

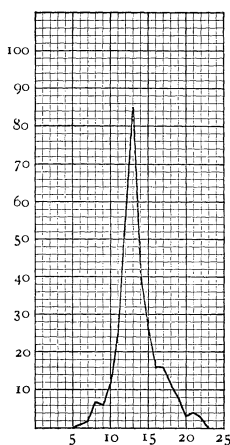


FIG. 1.—Lot No. 1. 318 Heads.
 Mean—14, 188 +.

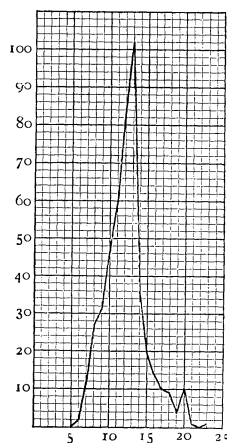


FIG. 2.—Lots 2 and 3. 468 Heads.
 Mean, Lot 2—11.328 +; Mean,
 Lot 3—11.868 +.

moist. Collected July 7th. These heads were picked at random from a large patch. Fig. 1.

Lot No. 2.—225 heads. Collected from the same region and at the same time as those of lot No. 1. In this case, however, 56 different plants were pulled and all the flowers on each were included in the count. Fig. 2.

Lot No. 3.—240 heads. From the prairies two miles directly

East of the first locality. Ground was much less moist. 40 plants were collected at random and all the flowers counted as in lot No. 2. Collected July 12th. Fig. 2.

Lot. No. 4.—173 heads. From the prairies about eight miles southeast of the preceding localities and not far from the lake shore. Ground moist from recent and continued rains. Plants were all rather low and much shaded by tall grass and tall weeds. Collected July 16th. Fig. 3.

Lot No. 5.—246 heads. From the same general region as

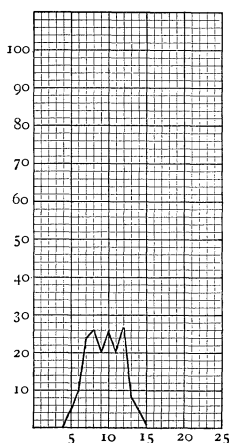


FIG. 3.—Lot No. 4. 173 Heads.
Mean—9.612 +.

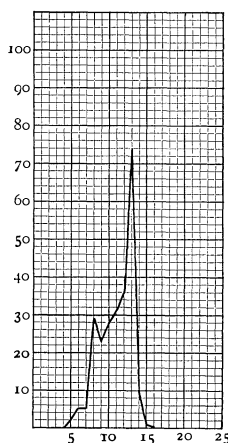


FIG. 4.—Lot No. 5. 246 Heads.
Mean—11.813 +.

in the case of Lot No. 4, but from portions of the prairie where there were fewer weeds and from lanes in the vicinity. Collected July 21st.

In the case of both Lot 4 and Lot 5 plants were pulled up at random and all the flowers of each plant included in the count. The results of the various counts is shown in the following curves.

Comparing the above curves we notice one rather interesting fact. The curve of those heads which were growing under what had been noticed to be especially unfavorable (curve 3) is entirely different from the other three, curves 1 and 2 being especially symmetrical. I am of the opinion that the reason that curve 4 is not so symmetrical as 1 and 2 is that the heads were taken from plants not far enough removed from those represented in

curve 3. The curve in fact shows the transitional condition as regards favorable conditions of growth. Curve 3 on the other hand is a representation in the form of a curve of very unfavorable conditions of growth.

The characteristic mode of *Rudbeckia hirta* is 13. There are also secondary modes at 8 and at 20-21 and the series thus reminds one of Ludwig's series for *Chrysanthemum leucanthemum*. In connection with these different modes it is interesting to note that the number of rays is made the basis of classification.

Species.	Gray.	Britton & Brown.
<i>R. hirta</i>	Rays about 14	Rays 10-20
<i>R. fulgida</i>	Rays about 12	Rays 10-15
<i>R. spathulata</i>	Rays few	Rays 8-12
<i>R. speciosa</i>	Rays numerous	Rays 12-20

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